DOCUMENT RESUME

ED 405 835 IR 018 275

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TITLE	Using TQM: A New Teaching Model.
PUB DATE	96
NOTE	8p.; In: Association of Small Computer Users in Education (ASCUE) Summer Conference Proceedings (29th, North Myrtle Beach, SC, June 9-13, 1996); see IR 018 247.
PUB TYPE	Reports - Descriptive (141) -- Speeches/Conference Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Active Learning; *College Instruction; College Seniors; Computer Mediated Communication; Computer Science Education; Course Organization; Higher Education; *Information Skills; *Information Technology; Instructional Innovation; Learning Activities; Lifelong Learning; Management Information Systems; *Skill Development; Student Role; *Teaching Models; *Total Quality Management
IDENTIFIERS	Continuous Improvement; Customer Services; *Northwest Missouri State University

ABSTRACT

The objectives of an innovative teaching model implemented in a course at Northwest Missouri State University Department of Science/Information System are to: (1) use the Total Quality Management (TQM) concept in course design and implementation in the MIS (management information systems) curriculum; (2) develop attitudes and behaviors associated with this type of thinking in the students; (3) provide flexibility in the development of senior level courses; and (4) expand the learning process beyond traditional barriers while developing increased knowledge and skills in information techNologies. Students in this course are generally undergraduates in their final (senior) semester. Using the TQM philosophy to design a course requires a focus on the student as the customer/client, on the process of learning activities, and on continual improvement of this learning activity. Students are not told they are participating in a TQM activity; by the time they get to this point, they have been lead through a process of developing the skills related to the concept. Course-related content is distributed via e-mail to encourage the use of and familiarize students with electronic communication. The process focus of TQM develops students' educational experience so that it is not limited to subject matter, but so that it includes an understanding of the learning process itself. Students become active participants in the knowledge building process and they express appreciation for the sense of power they have. They are acquainted not only with a variety of information sources, but also with the type of effort necessary for life-long learning. (Contains 10 references.) (AEF)

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USING TQM: A NEW TEACHING MODEL

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Focus and Objective

The current management frenzy of applying Total Quality Management concepts to enhance business practice is pervasive in profit and non-profit firms. Its tenets have recently been tested by academia as a possible model for improving the quality of education. This paper addresses the infusion of the TQM principles at the course level in order to provide students with real working knowledge of what TQM means as a life skill. Students actually use (experience) the TQM principles as a method for improving their learning process and activity while building their knowledge and skills base.

The objective of this innovative teaching model is to: Use the Total Quality Management concept in course design and implementation in the MIS curriculum; Develop attitudes and behaviors associated with this type of thinking in the students, Provide flexibility in the development of senior level courses, and
Expand the learning process beyond traditional barriers while developing increased knowledge and skills in information technologies.

Uniqueness of Approach

This approach is unique in that it incorporates a new technology--TQM directly into the learning process. This process focus creates an environment in which the undergraduate student takes a concept or idea about which they know very little--planning organizing and controlling their traditionally passive learning environment--and transforms it into an active, participative one. In the process the student builds the course content, determines schedules, evaluation methods and criteria and then proceeds to carry it out. Students become empowered to determine outcomes; have freedom to fail, learn from their mistakes and redesign and improve learning toward a purpose and goal they have developed and internalized.

Level of Students

Students are generally seniors in their final semester. They have completed nearly all of their course work in the business core, have had at least two programming languages, and MIS courses such as telecommunications, systems analysis and design, and management models. Their course of study is tightly constrained within the 124 required hours for graduation leaving only three to seven hours of electives. Several students have double majors such as accounting, finance, international business, or math.

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Content and Process of Learning Current IS Topics

A variety of inefficiencies and waste exist in the traditional learning environment. Examples include: tying all course information to a single source--the professor; sub optimizing the depth and breadth of learning activity for individuals via satisficing for the class as a whole; inflexibility of course content of a single syllabus when students enter with varying degrees of experience and background as well as different career goals; and maintaining the locus of control and power in the professor. Using the Total Quality Management philosophy to design the course requires a focus on the student as the "customer/client", on the process of learning activities, and on continual improvement of this learning activity.

Traditional teaching/learning activity focuses on content, i.e. knowledge, not process. Therefore, students expect to only be held accountable for that content with little attention paid to the process of building their knowledge. When they are brought into the process as designers and creators, they develop behaviors which inherently focus on improved quality of performance and knowledge acquisition.

This is especially applicable in the field of Management Information Systems as a thorough understanding of the acquisition, manipulation, and storage of information is fundamental. Additionally, the dynamic field requires continual learning and upgrading of knowledge and skills. Knowing the "what" is often not nearly so critical as knowing "how to find out" about the "what."

TQM is primarily a mentality which must be absorbed into the activities of ones daily work with a focus on making the product or service outcomes more effective, efficient and thus satisfying. The approach outlined below operationalizes that philosophy in a teaching/learning environment which enhances the ability to learn information systems concepts and applied technologies.

Organization

Students are instructed at the first class meeting that these are the criteria for the course:

1. This is not a "class" like any other class, it is a learning experience.

2. The learning experience will be individual specific and designed by the student. (with appropriate help and guidance)

3. Their focus will be upon course content learning as well as learning as a process activity.

4. Each individualized study plan must focus on current and relevant information systems topics and must include:
   a. a group project/study activity
   b. an individual project/study activity
   c. an outside presentation
   d. produce incremental knowledge building upon relevant MIS fields or topics

5. Course goals include:
   a. development of documentation skills through
      (1) development of a complete course proposal,
      (2) taking, verifying and disseminating minutes of meetings,
      (3) establishing and recommending agendas,
      (4) accountability via work activity and reports.
   b. development of leadership/knowledge building skills through
      (1) presentation of incremental knowledge gained through live study and experience,
      (2) calling and presiding at meetings,
      (3) facilitating teamwork,
      (4) making effective decisions,
      (5) influencing others,
      (6) creating, executing, and evaluating plans,
      (7) accepting responsibility, demonstrating professional integrity
      (8) use of judgment and reason,
      (9) THINKING.

6. The professor's role is that of facilitator and advisor.

7. Reference guides are distributed for locating research literature relating to MIS topics. Students are instructed to read and skim a minimum of six periodicals for at least the past six months to develop an awareness of current topics in the field. They are then to word process a two-page synopsis of 5 relevant topics along with a rationale for why they are important and why those were selected.

8. Classes meet once per week for three hours.

Presentation Activity

Initial Class Activities. The second class meeting is devoted entirely to collectively sharing and assessing pertinent topics gleaned from the research. The students assignment for the following class meeting is to take the knowledge they have gained from this discussion, assess their own interests, career goals, and their individual strengths and weaknesses via a letter of application, resume, and transcript and return with a tentative course of study **worthy of three hours of university credit.** The instructor selects a student to record the minutes of the third class meeting.

The third class meeting is then devoted to discussion of similarities and differences among the course plans (which tend to be very incomplete and undecided at this point). Groups then form to discuss appropriate alliances as well as divergent needs or foci. Students tend to be very frank and challenging when someone appears to not be "putting out the effort" to meet the challenges set before them.

A Course Plan Guide handout listing all core requirements for successful completion of the plan of study is provided at the end of that meeting and a discussion of the requirements for completeness of the course proposal is delineated regarding specific requirements. Additionally,

sample daily, weekly, and semester calendars are distributed to encourage documentation of tentative plans. It is noted that these will be used as a basis for determining project meeting times and dates as well as research activities.

An important component of the course study plan is the establishment of a project/research activity with an external constituent to whom they will have responsibility. Examples of these types of activities have included analysis, design, purchase, and installation of a local area network for a non-profit organization, installation of software and training a small business owner on his PC, development of multi-media presentations for beginners to learn software, and Internet presentations at Regional conferences.

Each student is required to set up an appointment for consultation regarding their individual study plan. They are instructed to meet with other group members of their respective groups prior to the meeting with the instructor so that those agreements can be included.

For all following "staff" meetings (as they are to be called) a recorder will take minutes. These are to be created and distributed via e-mail to all participants for their review and comments prior to the next meeting. The recorder will then become the chair of the next meeting and will select another student to record for that meeting. Thus, each student accepts responsibility for reporting, communicating, and directing meeting information.

By the fourth meeting, course study plans are nearing final stages of revision. Minutes of the previous meeting are noted with corrections. A format for conducting meetings is established by the students. Students arrange for a one-on-one meeting with the faculty member outside of class time and a more detailed evaluation is done following the guidelines on the "Course Plan Guide."

By the fifth week, meetings are being entirely run by students, courses of study have been thoroughly analyzed and evaluated, schedules are set, and contingency plans are in place. Students at this point really begin to show initiative and leadership behaviors. Their professional focus and interaction is clearly observed. It is helpful at this meeting to have developed a composite guide of course proposals in a spreadsheet format.

Students are not told they are participating in a TQM activity. By the time they get to this point in their business related curriculum, they have been inundated with the "words" about this topic, it is therefore, not presented as a part of the course content. Instead, they are simply lead through a process of developing the skills related to the concept. Each meeting becomes a learning and sharing experience where continuous improvements are sought in how meetings, communications, and learning activities are efficiently and effectively handled.

Electronic Communication's Role

Our campus is equipped with electronic campus mail and Internet facilities to all campus student rooms, offices, and labs, and dial-in is available for off-campus students. Extensive use is made of e-mail facilities for distribution of announcements, group activities and updates, as well as discussion between individuals and exchange of information. For most students e-mail is not viewed as a primary mode of communication between faculty and students as well as between other

students. Therefore, proper etiquette of handling e-mail is incorporated into the course activities.

Minutes of meetings and agenda for up-coming meetings are composed and distributed via e-mail. Continuous contacts can thus be maintained and immediate feedback can facilitate the time spent in "staff" meetings. Many issues or questions are resolved between two or more members without taking any of the limited and thus precious meeting time.

This not only enforces the technology component as a "matter of course" for users, but also encourages exploration on the Internet for a variety of sources of information. It frees up the participants to engage in conversation multiple times and in multiple locations under a variety of circumstances. For example, a study group may be in the library and need a response to a question. They e-mail the message(s) as the meeting is in progress. Everyone is instructed to check their mail frequently. Responses often come immediately as someone may be working on the computer system when the message posts and transmits a response.

E-mail also encourages creative ways to get their point across and create influence upon others. It is a difficult medium to develop skill in using effectively and this experience greatly enhances that potential. Each one is encouraged to provide appropriate documentation for each message, sign it, and give complete information. Anyone not responding to their e-mail messages is questioned by and/or in front of the group and reason must be given for their laxity.

Effectiveness and Specific Benefits

The outcomes of this approach have been tremendously positive. Student actions have changed from passive to active. Thought processes have demonstrated creativity and lateral thinking which is often initially regarded as a frightening experience, but culminates in high levels of self-satisfaction.

Recommendations for improved processes are continually brought to light. Professionally-based personal relationships develop where no relationship would have existed in a traditional course. Group and individual processes as well as communication are enhanced as projects require constant updating and interaction and decision making activity. Individual responsibility becomes a key variable and students understand fully the consequences of their behaviors and hold each other and the professor accountable either explicitly or implicitly.

Interest is constantly high as students have focused upon their weaknesses in designing the individualized course plan and set targets in which they have complete ownership. Resourcefulness develops as students realize that they must find out where, when, and how to gather information and learning materials as well as when, where, and how to develop, study, and complete them. Interest and membership increases in the campus professional organization--Computer Management Society.

The dynamic course structure lends itself to broadening the students capacity to develop sources of information both individually and collectively. Interpersonal and communication skills are enhanced by experiencing information seeking in person, on the phone, and by fax or mail for a specific purpose with which they had a vested interest. Business persons and faculty from other disciplines who generally have no contact with these students were able to interact and develop an

enhanced appreciation for the student's energy and potential.

Experience teaches in a manner which develops intuitive inferences often difficult to verbalize. However, this development activity for enhancing learning by using the TQM methodology in an MIS special topics course has proven to be more valuable than most course design experiences for a variety of reasons.

The students become active participants in the knowledge building process because they gradually become aware that they are *using* the technologies. They realize for the first time that there is a way to gain information extending beyond traditional means which requires thought, insight, courage, and innovation.

They understand that there are no "answer books" for most of their life's work. And they begin to articulate the "missing pieces" and ineffective behaviors related to information and knowledge acquisition. They understand how much more there is to learn than has been acquired. This type of insightful and immediate feedback from students in the traditional courses is seldom achieved.

The students express appreciation for the sense of power they have, for the ability to control their time and schedules to their best advantage, for the opportunity to work with and get to know others in the class, to deepen their understanding or explore new topics of particular interest. They like the opportunity to interact with and to be responsible to outside faculty and/or business professionals. They show excitement about telling others about their experiences in the course and enhancing their resumes by enhancing strengths and overcoming weaknesses.

The above items were taken from an interview given to the campus newspaper by the students in the class. The reporter and photographer observed a portion of the course then asked for feedback as to what or how this course is effective. Other comments were taken from the written mid-term and end of semester evaluations contributed by students who have previously taken the course.

The process focus of TQM has thus transformed into their educational experience an understanding not limited to a subject matter, but including the learning process itself. They are acquainted with not only a variety of information resources for further learning, but also with the type of effort necessary for life-long learning to take place.

It helps provide opportunity for faculty development as the process of learning a myriad of topics conjunctively with students challenges and encourages new thinking. It gives an opportunity for contact with a larger number of information providers and industry people than do traditional methods. This methodology does, however, require more time and better management skills for the professor, but the rewards for the students have been worth the effort. As better and more pervasive electronic methods are adopted campus wide, it is anticipated that "new and improved" methods of teaching and learning will continue to develop. This approach will adapt readily to changing environments and rapid learning processes.

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